CLAIMS

1. A method of identifying an agent that modulates the function of ChemR23, said method comprising :

a) contacting a ChemR23 polypeptide with a TIG2 polypeptide in the presence and absence of a candidate modulator under conditions permitting the binding of said TIG2 polypeptide to said ChemR23 polypeptide; and

b) measuring the binding of said ChemR23 polypeptide to said TIG2 polypeptide, wherein a decrease in binding in the presence of said candidate modulator, relative to the binding in the absence of said candidate modulator, identifies said candidate modulator as an agent that modulates the function of ChemR23.

2. A method of detecting the presence, in a sample, of an agent that modulates the function of ChemR23 in a sample, said method comprising :

a) contacting a ChemR23 polypeptide with a TIG2 polypeptide in the presence and absence of said sample under conditions permitting the binding of said TIG2 polypeptide to said ChemR23 polypeptide; and

b) measuring the binding of said ChemR23 polypeptide to said TIG2 polypeptide, wherein a decrease in binding in the presence of said sample, relative to the binding in the absence of said candidate modulator, indicates the presence, in said sample of an agent that modulates the function of ChemR23.

3. A method of identifying an agent that modulates the function of ChemR23, said method comprising :

a) contacting a ChemR23 polypeptide with a TIG2 polypeptide in the presence and absence of a candidate modulator; and

b) measuring a signaling activity of said ChemR23 polypeptide, wherein a change in the activity in the presence of said candidate modulator relative to the activity in the absence of said

candidate modulator identifies said candidate modulator as an agent that modulates the function of ChemR23.

4. A method of identifying an agent that modulates the function of ChemR23, said method comprising:

a) contacting a ChemR23 polypeptide with a candidate modulator;

b) measuring a signaling activity of said ChemR23 polypeptide in the presence of said candidate modulator; and

c) comparing said activity measured in the presence of said candidate modulator to said activity measured in a sample in which said ChemR23 polypeptide is contacted with a TIG2 polypeptide at its EC_{50}, wherein said candidate modulator is identified as an agent that modulates the function of ChemR23 when the amount of said activity measured in the presence of said candidate modulator is at least 50% of the amount induced by said TIG2 polypeptide present at its EC_{50}.

5. A method of detecting the presence, in a sample, of an agent that modulates the function of ChemR23, said method comprising :

a) contacting a ChemR23 polypeptide with TIG2 polypeptide in the presence and absence of said sample;

b) measuring a signaling activity of said ChemR23 polypeptide; and

c) comparing the amount of said activity measured in a reaction containing ChemR23 and TIG2 polypeptides without said sample to the amount of said activity measured in a reaction containing ChemR23, TIG2 and said sample, wherein a change in said activity in the presence of said sample relative to the activity in the absence of said sample indicates the presence, in said sample, of an agent that modulates the function of ChemR23.

6. A method of detecting the presence, in a sample, of an agent that modulates the function of ChemR23, said method comprising:

a) contacting a ChemR23 polypeptide with said sample;

b) measuring a signaling activity of said ChemR23 polypeptide in the presence of said sample; and

c) comparing said activity measured in the presence of said sample to said activity measured in a reaction in which said ChemR23 polypeptide is contacted with a TIG2 polypeptide present at its EC_{50}, wherein an agent that modulates the function of ChemR23 is detected if the amount of said activity measured in the presence of said sample is at least 50% of the amount induced by said TIG2 polypeptide present at its EC_{50}.

7. The method of any one of claims 1-5 wherein said TIG2 polypeptide is detectably labeled.

8. The method of claim 7 wherein said TIG2 polypeptide is detectably labeled with a moiety selected from the group consisting of a radioisotope, a fluorophore, a quencher of fluorescence, an enzyme, an affinity tag, and an epitope tag.

9. The method of any one of claims 1-6 wherein said contacting is performed in or on a cell expressing said ChemR23 polypeptide.

10. The method of any one of claims 1-6 wherein said contacting is performed in or on synthetic liposomes.

11. The method of any one of claims 1-6 wherein said contacting is performed in or on virus-induced budding membranes containing a ChemR23 polypeptide.

12. The method of any one of claims 1-6 wherein said method is performed using a membrane fraction from cells expressing said ChemR23 polypeptide.

13. The method of either of claims 1 or 2 wherein said measuring is performed using a method selected from label displacement, surface plasmon resonance, fluorescence resonance energy transfer, fluorescence quenching, and fluorescence polarization.

14. The method of any one of claims 1-6 wherein said agent is selected from the group consisting of a peptide, a polypeptide, an antibody or antigen-binding fragment thereof, a lipid, a carbohydrate, a nucleic acid, and a small organic molecule.

15. The method of any one of claims 3-6 wherein said step of measuring a signaling activity of said ChemR23 polypeptide comprises detecting a change in the level of a second messenger.

16. The method of either of claims 3-6 wherein the step of measuring a signaling activity comprises measurement of guanine nucleotide binding or exchange, adenylate cyclase activity, cAMP, Protein Kinase C activity, phosphatidylinosotol breakdown, diacylglycerol, inositol triphosphate, intracellular calcium, arachinoid acid, MAP kinase activity, tyrosine kinase activity, or reporter gene expression.

17. The method of claim 16 wherein said measuring a signaling activity comprises using an aequorin-based assay.

18. A method of modulating the activity of a ChemR23 polypeptide in a cell, said method comprising the step of delivering to said cell an agent that modulates the activity of a ChemR23 polypeptide, such that the activity of ChemR23 is modulated.

19. A method of diagnosing a disease or disorder characterized by dysregulation of ChemR23 signaling, said method comprising :

a) contacting a tissue sample with an antibody specific for a ChemR23 polypeptide;

b) detecting binding of said antibody to said tissue sample; and

c) comparing the binding detected in step (b) with a standard, wherein a difference in binding relative to said standard is diagnostic of a disease or disorder characterized by dysregulation of ChemR23.

20. A method of diagnosing a disease or disorder characterized by dysregulation of ChemR23 signaling, said method comprising:

a) contacting a tissue sample with an antibody specific for a TIG2 polypeptide;

b) detecting binding of said antibody to said tissue sample; and

c) comparing the binding detected in step (b) with a standard, wherein a difference in binding relative to said standard is diagnostic of a disease or disorder characterized by dysregulation of ChemR23.

21. A method of diagnosing a disease or disorder characterized by dysregulation of ChemR23 signaling, said method comprising :

a) contacting a tissue sample with an antibody specific for a ChemR23 polypeptide and an antibody specific for a TIG2 polypeptide;

b) detecting binding of said antibodies to said tissue sample; and

c) comparing the binding detected in step (b) with a standard, wherein a difference in the binding of either antibody or both, relative to said standard, is diagnostic of a disease or disorder characterized by dysregulation of ChemR23.

22. A method of diagnosing a disease or disorder characterized by dysregulation of ChemR23 signaling, said method comprising :

a) isolating nucleic acid from a tissue sample;

b) amplifying a ChemR23 polynucleotide, using said nucleic acid as a template; and

c) comparing the amount of amplified ChemR23 polynucleotide produced in step (b) with a standard, wherein a difference in said amount of amplified ChemR23 polynucleotide relative to said standard is diagnostic of a disease or disorder characterized by dysregulation of ChemR23.

23. A method of diagnosing a disease or disorder characterized by dysregulation of ChemR23 signaling, said method comprising :

a) isolating nucleic acid from a tissue sample;

b) amplifying a ChemR23 polynucleotide, using said nucleic acid as a template; and

c) comparing the sequence of said amplified ChemR23 polynucleotide produced in step (b) with a standard, wherein a difference in said sequence, relative to said standard is diagnostic of a disease or disorder characterized by dysregulation of ChemR23.

24. The method of claim 23 wherein said standard is SEQ ID NO: 1.

25. A method of diagnosing a disease or disorder characterized by dysregulation of ChemR23 signaling, said method comprising :

a) isolating nucleic acid from a tissue sample;

b) amplifying a TIG2 polynucleotide, using said nucleic acid as a template; and

c) comparing the amount of amplified TIG2 polynucleotide produced in step (b) with a standard, wherein a difference in said amount of amplified TIG2 polynucleotide relative to said standard is diagnostic of a disease or disorder characterized by dysregulation of ChemR23.

26. A method of diagnosing a disease or disorder characterized by dysregulation of ChemR23 signaling, said method comprising :

a) isolating nucleic acid from a tissue sample;

b) amplifying a TIG2 polynucleotide, using said nucleic acid as a template; and

c) comparing the sequence of said amplified TIG2 polynucleotide produced in step (b) with a standard, wherein a difference in said sequence, relative to said standard is diagnostic of a disease or disorder characterized by dysregulation of ChemR23.

27. The method of claim 23 or claim 26 wherein the step of comparing the sequence comprises minisequencing.

28. The method of claim 26 wherein said standard is SEQ ID NO: 7.

29. The method of claim 22 or claim 25 wherein said comparing the amount is performed on a microarray.

30. The method of claim 23 or claim 26 wherein said comparing the sequence is performed on a microarray.

31. A composition comprising an isolated ChemR23 polypeptide and an isolated TIG2 polypeptide.

32. An antibody specific for a Chem R23 polypeptide.

33. An antibody specific for a TIG2 polypeptide.

34. A kit for screening for agents that modulate the signaling activity of ChemR23, said kit comprising an isolated ChemR23 polypeptide and packaging materials therefor.

35. The kit of claim 34, further comprising a TIG2 polypeptide.

36. A kit for screening for agents that modulate the signaling activity of ChemR23, said kit comprising an isolated polynucleotide encoding a ChemR23 polypeptide and packaging materials therefor.

37. The kit of claim 36, further comprising an isolated polynucleotide encoding a TIG2 polypeptide.

38. A kit for screening for agents that modulate the signaling activity of ChemR23, said kit comprising a cell transformed with a polynucleotide encoding a ChemR23 polypeptide and packaging materials therefor.

39. A kit for the diagnosis of a disease or disorder characterized by dysregulation of ChemR23 signaling, said kit comprising an isolated ChemR23 polypeptide and packaging materials therefor.

40. The kit of claim 39, further comprising a TIG2 polypeptide.

41. A kit for the diagnosis of a disease or disorder characterized by dysregulation of ChemR23 signaling, said kit comprising an isolated polynucleotide encoding a ChemR23 polypeptide and packaging materials therefor.

42. The kit of claim 41, further comprising an isolated polynucleotide encoding a TIG2 polypeptide.

43. A kit for the diagnosis of a disease or disorder characterized by dysregulation of ChemR23 signaling, said kit comprising a cell transformed with a polynucleotide encoding a ChemR23 polypeptide and packaging materials therefor.

44. A non-human mammal having a homozygous null mutation in the gene encoding ChemR23.

45. A non-human mammal transgenic for a ChemR23 polynucleotide.

46. A non-human mammal transgenic for a TIG2 polynucleotide.